

Art Unit: \*\*\*

April 1, 2005

CLMPTO

AS

1. A method of generating a synchronisation pulse representing a symbol boundary in an OFDM signal comprising useful symbol periods separated by guard spaces, with data in each guard space corresponding to part of the data in a respective useful period, the method comprising providing a signal representing the degree of correlation between samples of a received signal which are separated by a period corresponding to the useful part of the symbol, the signal thus providing an output representing for each symbol an interval during which significant correlation is found, the method comprising the further step of determining a sub-interval within which a maximum degree of correlation occurs and arranging for the synchronisation pulse to be provided within this sub-interval.

2. A method as claimed in claim 1, wherein the sub-interval is determined by applying a threshold to the signal representing the degree of correlation.

3. A method as claimed in claim 2, wherein the threshold is varied.

4. A method as claimed in claim 3, wherein the threshold represents a value which is dependent upon the maximum value of the signal

representing the degree of correlation.

Art Unit: \*\*\*

5. (Amended) A method as claimed in claim 1, in which the signal representing the degree of correlation is subject to filtering prior to using the signal to determine said sub-interval, the filtering being such that each filtered output sample represents, substantially, an average of a predetermined number of successive samples, said predetermined number being substantially less than the number of samples within a guard space.

6. A method as claimed in claim 5, in which the filtered output represents values averaged over a plurality of symbols.

7. A method as claimed in claim 6, in which the number of symbols over which the filtered output values are averaged increases during an acquisition stage, and in which the filtering is adjusted during that acquisition stage so as to decrease the number of successive samples, the average of which is represented by each filtered output sample.

8. (Amended) A method as claimed in claim 5, wherein the filtered output is subjected to further filtering before being processed to provide a signal representing a fine frequency offset.

9. (Amended) A method as claimed in claim 1, including the step of adjusting the timing of the synchronisation pulse only if a calculated error in the current timing exceeds a predetermined threshold.

10. (Amended) A method as claimed in claim 1, including the step of adjusting the timing of the synchronisation pulse only if the current timing is determined to be in error over a predetermined number of symbol periods, the predetermined number of symbol periods being greater than one.

11. (Amended) A method as claimed in claim 1, wherein the timing of the synchronisation pulse is adjusted in predetermined quantities corresponding to a plurality of sample periods.

Art Unit: \*\*\*

12. A method of generating a synchronisation pulse representing a symbol boundary in an OFDM signal comprising useful symbol periods separated by guard spaces, with data in each guard space corresponding to part of the data in a respective useful period, the method including the step of adjusting the timing of the synchronisation pulse in response to a calculated error in the current timing exceeding a predetermined threshold.

13. A method of generating a synchronisation pulse representing a symbol boundary in an OFDM signal comprising useful symbol periods separated by guard spaces, with data in each guard space corresponding to

part of the data in a respective useful period, the method including the step of adjusting the timing of the synchronisation pulse in response to the current timing being determined to be in error over a predetermined number of symbol periods, the predetermined number of symbol periods being greater than one.

14. A method as claimed in claim 13, wherein the timing of the synchronisation pulse is adjusted in response to the current timing having an error exceeding a predetermined threshold over said predetermined number of symbol periods.

15. A method of generating a synchronisation pulse representing a symbol boundary in an OFDM signal comprising useful symbol periods separated by guard spaces, with data in each guard space corresponding to part of the data in a respective useful period, the method including the step of adjusting the timing of the synchronisation pulse in predetermined quantities corresponding to a plurality of sample periods.

16. (Amended) A method as claimed in claim 12, wherein the timing of the synchronisation pulse is adjusted in predetermined quantities corresponding to a plurality of sample periods.

Art Unit: \*\*\*

17. A method of receiving an OFDM signal, the method including the step of generating a synchronisation pulse using a method as claimed in any preceding claim, and using the synchronisation pulse in order to apply a Fast Fourier Transform to complex samples derived from the OFDM signal.

18. A method according to claim 17, the method further including the step of providing, when the timing of the synchronisation pulse is altered, a signal representing the degree of alteration, and applying to the transformed samples phase rotations determined by this signal.

19. A method as claimed in claim 18, wherein the phase rotations are determined by values in a look-up table addressed in accordance with the signal representing the degree of alteration of the synchronisation pulse timing.

20. A method of receiving an OFDM signal, the method including the steps of generating a synchronisation pulse and using the synchronisation pulse in order to apply Fast Fourier Transform to complex samples derived from the OFDM signal, the method further including the step of providing, when the timing of the synchronisation pulse is altered, a signal representing the degree of alteration, and applying to the transformed samples phase rotations determined by this signal.

21. A method as claimed in claim 20, wherein the phase rotations are determined by values in a look-up table addressed in accordance with the signal representing the degree of alteration of the synchronisation pulse timing.

Art Unit: \*\*\*

22. (Amended) Apparatus for generating a synchronising pulse, the apparatus operating according to a method as claimed in claim 1.

23. (Amended) An OFDM receiver arranged to operate in accordance with a method according to claim 17.